

A REVIEW OF THE GENUS *THOREYELLA* SPINOLA
(HEMIPTERA: PENTATOMIDAE)

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Abstract.—The genus *Thoreyella*, which seems restricted to southeastern South America, is redefined. *Thoreyella cornuta*, *T. taurus* and *T. trinotata* are re-described and the genitalia of these species and of *T. brasiliensis* are figured, excepting the male of *T. taurus*, which is unknown. Lectotypes and paralectotypes are designated for *Thoreyella cornuta* and *T. trinotata*. A key to the four species is provided. *Thoreyella pentamaculata* is rejected as a member of the genus.

Thoreyella is one of seven American pentatomine genera distinguished by an abdominal spine that projects beneath the metasternum and by bucculae that extend as lobes nearly to or past the distal end of the first rostral segment. Of these genera (*Aleixus*, *Brepholoxa*, *Dendrocoris*, *Odmalea*, *Rio*, *Thoreyella* and *Zorcadium*) only *Aleixus*, *Odmalea* and *Rio* contain species sympatric with *Thoreyella* species, which seem restricted to southeastern South America.

A convenient means of separating *Rio* and *Thoreyella* is the prolongation of the superior femoral surface into an acute apical spine in the latter genus. *Aleixus* is easily recognized by a large dorsal tubercle on each humerus.

Several characters serve to separate *Thoreyella* and *Odmalea*. In *Thoreyella* the juga are contiguous distally, the ostiolar rugae slightly curved, the costal angle of the coria reaches little or not at all beyond the scutellum and the frena extend little past the basal third of the scutellum. On the contrary, in *Odmalea* the juga converge distally but are not normally contiguous, the ostiolar rugae are straight, the costal angle of each corium far surpasses the scutellum and the frena extend beyond the middle of the scutellum.

Four species of *Thoreyella* are recognized here: *T. brasiliensis* Spinola, *T. cornuta* Berg, *T. taurus* Jensen-Haarup and *T. trinotata* Berg. Pirán (1957) described a fifth species, *T. pentamaculata*, which belongs among the Asopinae (Grazia, 1983).

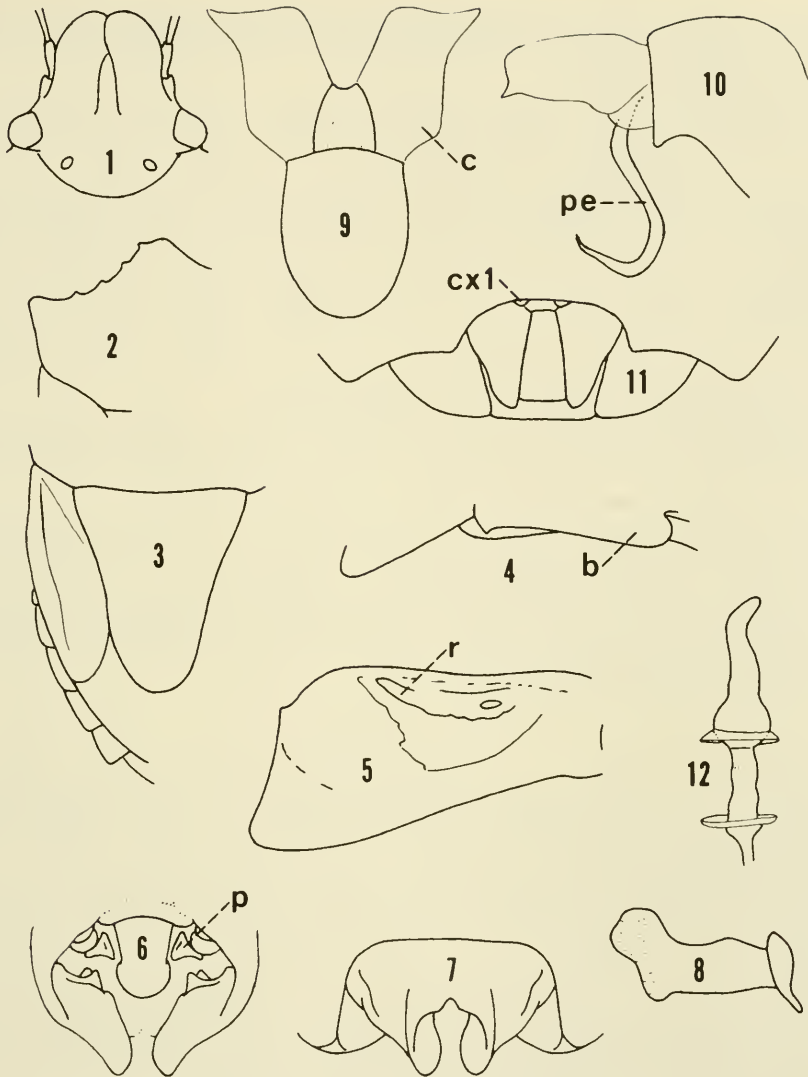
***Thoreyella* Spinola, 1850**

Thoreyella Spinola, 1850, p. 79-80—Spinola, 1852, p. 119-120—Stål, 1872, p. 45 (synonymy)—Jensen-Haarup, 1931, p. 319-320 (key to spp.)—Pirán, 1957, p. 67-68 (key to spp.).

Uditia Stål, 1860, p. 23—Stål, 1867, p. 531 (synonymized by Stål, 1872).

Type species: *Thoreyella brasiliensis* Spinola, by monotypy.

Head across eyes as wide as or a little wider than long, lateral margins sigmoid,



Figs. 1-12. *Thoreyella brasiliensis*. Fig. 1, Head. Fig. 2, Pronotum. Fig. 3, Scutellum and hemelytron. Fig. 4, Buccula (b). Fig. 5, Metapleuron; ostiolar ruga (r). Fig. 6, Genital cup; parameres (p). Fig. 7, Pygophore, ventral view. Fig. 8, Right paramere. Fig. 9, Theca and related structures; conjunctiva (c); Fig. 10, Same, lateral view; penisfilum (pe). Fig. 11, Genital plates; first gonocoxae (cx 1). Fig. 12, Spermatheca.

tapering to or subparallel before apex, juga contiguous before tylus (Figs. 1, 13, 25, 30).

First antennal segment not surpassing apex of head; second, third, and fourth segments subequal in length (except in *T. brasiliensis*), longer than first, shorter than fifth. Bucculae obtusely to acutely toothed near anterior limit, prolonged as lobe at base of head, extending to or past distal end of first rostral segment (Fig. 4); rostrum reaching metacoxae.

Humeral angles produced, angulate to spinose. Anterolateral margin obtusely rounded, sparsely denticulate or entire, bearing small tubercle at anterolateral angle (Figs. 2, 14, 26, 31).

Scutellum as long as or longer than wide at base; frena reaching little beyond basal third of scutellum. Costal angle of each corium extending beyond scutellum at most by one eighth length of scutellum (Fig. 3, 15, 27, 32).

Mesosternum broadly sulcate along meson; prosternum and metasternum flat. Ostiolar ruga curving from each ostiole toward anterior metathoracic margin, extending more than half the distance from inner margin of ostiole to lateral metathoracic margin (Figs. 5, 16, 28, 33). Superior surface of femora prolonged apically as spine (Figs. 17, 34); tibiae flattened or weakly sulcate on superior surface (only anterior pair flattened in *T. brasiliensis*). Abdominal spine projecting between metacoxae, sometimes attaining mesocoxae.

Pygophoral opening narrowing posteriorly on dorsal surface, continuing onto ventral surface (Figs. 6-7, 18-19, 35-36). Theca without lobes; penisfilum lying entirely on vertical median plane (Figs. 9-10, 21-22, 38-39).

First gonocoxae almost or entirely concealed (Figs. 11, 23, 29, 40). Spermathecal bulb elongate, without diverticula, enlarged only at distal flange (Figs. 12, 24, 41).

Comment.—Present incomplete evidence indicates that the lack of thecal lobes and unmodified spermathecal bulb, i.e., the absence of an enlargement other than at the distal flange and lack of diverticula, are generic features of *Thoreyella* contrasting with those of *Odmalea*.

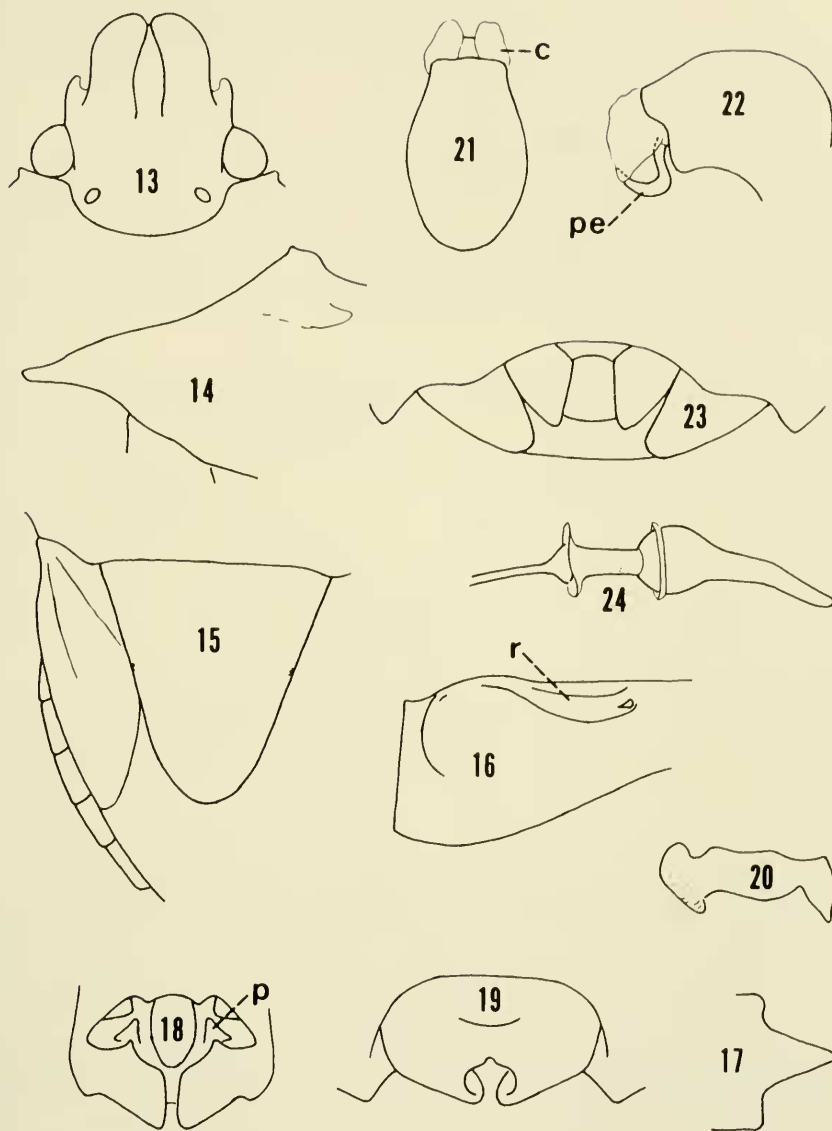
KEY TO SPECIES

1. Each spiracle slightly elevated on conspicuous callus; anterolateral margins of pronotum usually sparsely denticulate (Fig. 2) *T. brasiliensis* Spinola
- Spiracles neither elevated nor on callus; anterolateral margins of pronotum without clearly defined denticles 2
2. Width and length of scutellum subequal; lateral margins of juga subparallel before apex of head (Figs. 13, 25); head markedly darker than pronotal disk 3
- Scutellum about one-tenth longer than wide at base (Fig. 32); lateral margins of juga tapering toward apex of head, nowhere subparallel (Fig. 30); head nearly concolorous with pronotal disk *T. trinotata* Berg
3. Humeri spinose, turned little or not at all cephalad (Fig. 14)
- Humeri angulate, directed obliquely cephalad (Fig. 31) *T. cornuta* Berg
- *T. taurus* Jensen-Haarup

Thoreyella brasiliensis Spinola, 1850

Thoreyella brasiliensis Spinola, 1850, p. 80-81—Spinola, 1852, p. 120-121—Stål, 1872, p.45—Buckup, 1961, p. 13 (record)—Rolston, 1978, p. 22 (synonymy). *Rhaphigaster acutus* Herrich-Schäffler, 1851, p. 318. (synonymized by Stål, 1872). *Uditta impicta* Stål, 1860, p. 24 (synonymized by Stål, 1872). *Odmalea olivacea* Ruckes, 1959, p. 55 (synonymized by Rolston, 1978).

Ruckes (1959) described this species in detail and to his description only illustrations are added here.



Figs. 13–24. *Thoreyella cornuta*. Fig. 13, Head. Fig. 14, Pronotum. Fig. 15, Scutellum and hemelytron. Fig. 16, Metapleuron; ostiolar ruga (r). Fig. 17, Apex of femur, superior surface. Fig. 18, Genital cup; parameres (p). Fig. 19, Pygophore, ventral view. Fig. 20, Right paramere. Fig. 21, Theca and related structures; conjunctiva (c). Fig. 22, Same, lateral view; penisfilum (pe). Fig. 23, Genital plates. Fig. 24, Spermatheca.

The salient features distinguishing *T. brasiliensis* from congeners are the broadly contiguous and often overlapping jugs (Fig. 1), the usually denticulate anterolateral margins of the pronotum (Fig. 2), and the ivory callus surrounding and elevating each spiracle.

Distribution.—Brazil: Minas Gerais, Parana, Rio de Janeiro, Santa Catarina,

São Paulo, Rio Grande do Sul; Argentina: Misiones, Santa Fe, Buenos Aires. Presumably *T. brasiliensis* occurs in Uruguay since specimens have been taken to the north, west, and south of this country.

***Thoreyella cornuta* Berg, 1883**

Thoreyella cornuta Berg, 1883, p. 215—Berg, 1884, p. 31—Pirán, 1956, p. 31.

Unevenly yellowish brown, head much darker dorsally due to rather dense and evenly spaced black punctation and sometimes to darker ground color as well; elsewhere on dorsum punctation mostly castaneous; beneath concolorous excepting some dark punctures on humeri. Length without membranes 6.3 to 7.8 mm.

Juga just contiguous before tylus, their lateral margins subparallel before roundly truncate apex of head (Fig. 13). Vertex and usually base of tylus somewhat elevated. Bucculae acutely toothed at anterior limit but anterior margin of tooth appressed to head. Width of head through eyes 1.5–1.8 mm, length 1.4–1.6 mm. Antennal segments 0.3–0.4; 0.5–0.6; 0.5–0.6; 0.5–0.6; 0.7–0.8 mm in length.

Humeri stoutly produced, spinose, inclined slightly upward, connected by sinuous callus traversing disk (Fig. 14). Anterior pronotal disk usually lighter in color than posterior disk, strongly declivent, sometimes bearing transverse callus passing just caudad of cicatrices. Anterolateral pronotal margins entire, somewhat rough. Width across humeri 5.8–7.5 mm, length at meson 1.8–2.3 mm.

Width and length of scutellum subequal, 2.8–3.4 mm across base. Connexiva moderately exposed, sutures usually outlined in part or whole by darker color.

Ventrally, pronotum marked on each side by dark spot near anterolateral angle and another near distal end of supracoxal cleft. Apical spine of femora prominent, especially long and acute on posterior femora (Fig. 17). Stout abdominal spine reaching mesocoxae, apex bent toward sternum; spiracles thinly black ringed, not elevated; apical angles of abdominal sternites plainly black spotted.

Margin of dorsal opening into genital cup produced as strong tooth directly caudad of parameres (Fig. 18). Apex of parameres bilaterally expanded (Fig. 20), with concave surface facing tumescence on anterolateral walls of genital cup.

Tenth sternite of female slightly longer than wide at distal margin (Fig. 23).

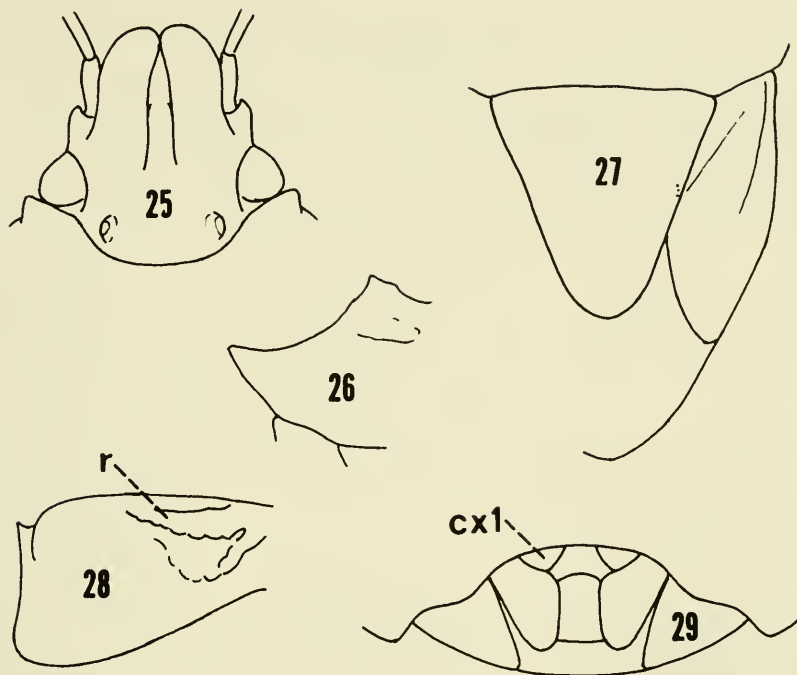
Types.—The following specimen is designated LECTOTYPE: male, labeled (a) Typus (b) Banda Oriental (c) 1409 (d) Museo La Plata. This specimen mounted above female. PARALECTOTYPES, all with same data as lectotype: ♀ mounted beneath lectotype; ♂, ♀ mounted on same pin; ♀ mounted alone.

Distribution.—Uruguay (type locality); Brazil: Mato Grosso; Argentina: Buenos Aires, Entre Ríos. Probably in Paraguay since one specimen examined came from the border town of Bela Vista, Mato Grosso, Brazil.

***Thoreyella taurus* Jensen-Haarup, 1931**

Thoreyella taurus Jensen-Haarup, 1931, p. 321.

Mostly light yellowish brown above and beneath, including appendages (olive green when originally described); head darker, humeri suffused faintly with red; body shiny. Punctation dark on head, in spot on scutellum near distal end of each frenum, in part on antenniferous tubercles and humeri, otherwise nearly concolorous. Two black marks located submarginally on each side of pronotum: a small



Figs. 25–29. *Thoreyella taurus*. Fig. 25, Head. Fig. 26, Pronotum. Fig. 27, Scutellum and hemelytron. Fig. 28, Metapleuron; ostiolar ruga (r). Fig. 29, Genital plates; first gonocoxae (cx 1).

mark beneath anterolateral denticle, a larger mark about midway between anterior and humeral angles. Length of body without membranes about 6.9 mm.

Lateral margins of juga parallel for middle third of distance from eyes to apex; juga individually rounded at apex of head (Fig. 25). Ocelli each on low tubercle about twice diameter of ocellus. Antennal segments 0.4; 0.5; 0.5; 0.6; 0.8 mm in length. Head 1.6 mm wide at eyes, equally long.

Pronotum 5.6 mm wide across humeri, 2.0 mm long at meson. Anterolateral margins concave, rough. Humeri stout, turned forward, elevated, acute (Fig. 26). Disk somewhat rugosely punctate, with a low median elevation passing between cicatrices.

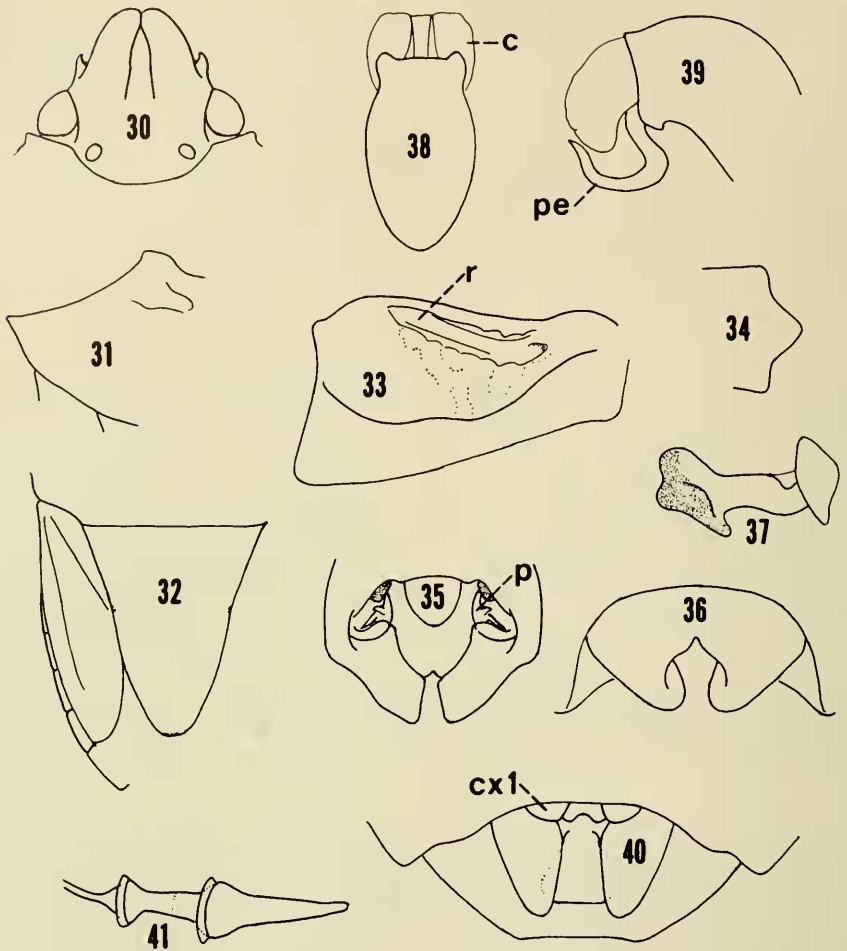
Scutellum 3.2 mm wide at base, nearly as long; apex broadly rounded. Hemelytra covering connexiva (Fig. 27).

Spiracles faintly black ringed, not tuberculate. Abdominal spine damaged in holotype. Apical angles of abdominal sternites black.

Tenth sternite slightly longer than wide distally (Fig. 29).

Distribution.—Known only form female holotype collected at “Lagoa Santa,” Brazil. Lagoa Santos, in São Paulo, may have been intended.

Comment.—This species resembles *T. trinotata* but differs especially in that the width and length of the scutellum is subequal, while in *T. trinotata* the scutellum is appreciably longer than wide. The tuberculate ocelli may not be diagnostic since these occasionally appear in *T. brasiliensis*.



Figs. 30–41. *Thoreyella trinotata*. Fig. 30, Head. Fig. 31, Pronotum. Fig. 32, Scutellum and hemelytron. Fig. 33, Metapleuron; ostiolar ruga (*r*). Fig. 34, Apex of femur, superior surface. Fig. 35, Genital cup; paramere (*p*). Fig. 36, Pygophore, ventral view. Fig. 37, Right paramere. Fig. 38, Theca and related structures, dorsal view; conjunctiva (*c*). Fig. 39, Same, lateral view; penisfilum (*pe*). Fig. 40, Genital plates; first gonocoxae (*cx 1*). Fig. 41, Spermatheca.

***Thoreyella trinotata* Berg, 1878**

Thoreyella trinotata Berg, 1878, p. 27—Berg, 1879, p. 58—Berg, 1883, p. 214—Berg, 1884, p. 30.

Light brownish yellow above and beneath, antennae and most dorsal punctures somewhat darker, much of dorsum heavily suffused with rufous in a few specimens; conspicuously marked ventrally with submarginal black line on basal half of head and apical third of pronotum, this line interrupted by eye; lateral margins of head, posterolateral margin of each humerus at apex, and apical margin of scutellum all usually thinly edged in fuscous or black; small dark dot present on

each side of scutellum near distal end of frena. Length of body without membranes 6.4–7.7 mm.

Punctuation on head concolorous, uniform, denser than elsewhere on dorsum. Disk only slightly convex. Lateral margins of juga barely concave before eyes, tapering toward apex (Fig. 30). Antennal segments 0.3; 0.4–0.5; 0.4–0.5; 0.5–0.6; 0.6–0.7 mm in length. Head 1.4–1.6 mm wide across eyes, 1.2–1.4 mm long.

Pronotum 4.5–5.2 mm wide at humeri, 1.7–2.0 mm long at meson. Antero-lateral margins obtuse, entire. Humeral angles moderately produce, angular to subacute (Fig. 31). Cicatrices poorly differentiated.

Scutellum 2.5–3.0 mm wide, 3.0–3.6 mm long, rather sparsely punctate, moderately rounded at apex (Fig. 32). Coria surpassing scutellum by less than one-eighth length of scutellum; membrane vitreous with inconspicuous venation. Connexiva immaculate, narrowly exposed.

Venter immaculate excepting submarginal black streak at base of head and apex of pronotum. Abdominal spine subcylindrical, rather stout, reaching between metacoxae. Apical spine on superior femoral surface obtuse (Fig. 34).

Margin of dorsal opening into genital cup prominently sulcate directly caudad of parameres (Fig. 35).

Medial edge of ninth paratergites triangularly depressed (Fig. 40).

Types.—The following specimen is designated LECTOTYPE: male, labeled (a) Typus (b) Buenos Aires (c) 1411 (d) Museo La Plata (missing right hemelytron; left hemelytron broken). PARALECTOTYPES: ♀, (a) Typus (b) Buenos Aires (c) *Thoreyella 3-notata* Berg (d) 45 (e) 1411 (f) Museo La Plata (left hemelytron missing); ♀, (a) Typus (b) Baradero, F. Lynch (c) 1411 (d) Museo La Plata; ♀, same data as lectotype.

Distribution.—Paraguay: Ascuncion; Uruguay; Argentina: Entre Ríos, Buenos Aires (type locality).

Comment.—When Berg described this species he noted that at least one of the six examples was rich green (“*Laete virides*”) and this is probably the usual ground color in life.

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LITERATURE CITED

- Berg, C. 1878. Hemiptera Argentina: Ensayo de una monografía de los Hemipteros Heteropteros y Homopteros de la Republica Argentina. Anal. Soc. Cient. Arg. 6: 23–32.
 ———. 1879. Hemiptera Argentina enumeravit speciesque novas descripsit. Bonariae. viii + 316 pp.
 ———. 1883. Addenda et emendanda ad Hemiptera Argentina. Anal. Soc. Cient. Arg. 15: 193–217.
 ———. 1884. Addenda et emendanda ad Hemiptera Argentina. Bonariae. 213 pp.

- Buckup, L. 1961. Os pentatomídeos do estado do Rio Grande do Sul (Brasil) (Hemiptera-Heteroptera-Pentatomidae) Iher. (Zool.) 16: 5-23.
- Grazia, J. 1983. Personal communication.
- Herrich-Schäffer, G. A. W. 1851. Die Wanzenartigen Insecten. Nurnberg. Vol. 9. 348 pp.
- Jensen-Haarup, W. C. 1931. Hemipterological notes and descriptions VI. Entomol. Medd. Copenhagen 17: 319-336.
- Pirán, A. A. 1956. Hemipteros raros o poco conocidos y no mencionados para las faunas de Brazil, Uruguay, Argentina, Paraguay y Bolivia. Rev. Soc. Urug. Entomol. 1: 29-35.
- . (1956) 1957. *Thoreyella pentamaculata* especie nueva de la fauna de Bolivia (Hemiptera, Pentatomidae). Neotropica 2: 65-68.
- Rolston, L. H. 1978. A revision of the genus *Odmalea* Bergroth (Hemiptera: Pentatomidae). J. N. Y. Entomol. Soc. 86(1): 20-36.
- Ruckes, H. 1959. A new species of *Odmalea* Bergroth from Brazil. J. N. Y. Entomol. Soc. 67: 55-57.
- Spinola, M. 1850. Di alcuni generi d'insetti arthroidignati nuovamenti proposti. Modena. (separate).
- . 1852. Di alcuni generi d'insetti arthroidignati nuovamenti proposti. Memorie di Matematica e di Fisica della Societa italiana delle Scienze Modena 25(1): 101-178.
- Stål, C. (1858) 1860. Bidrag till Rio Janeiro-traktens, Hemipter-fauna. Kongliga Svenska Vetenskaps-Akademiens Handlingar 2(7): 1-84.
- . 1867. Bidrag till hemipterernas systematik. Conspectus generum Pentatomidum Americae. Öfversigt af Kongliga Svenska Vetenskaps-Akademiens Forhandlingar 24(7): 522-534.
- . 1872. Enumeratio Hemipterorum II. Kongliga Svenska Vetenskaps-Akademiens Handlingar 10(4): 1-159.